

Safety Human Exposure

1.1 Radio Frequency Exposure Compliance

1.1.1 Electromagnetic Fields

RESULT:

Pass

Test Specification

Test item : Home Gateway
Identification / Type No. : E3330
FCC ID : Q78-E3330
Test standard : CFR47 FCC Part 2: Section 2.1091
CFR47 FCC Part 1: Section 1.1310
FCC KDB Publication 447498
FCC KDB Publication 865664 D02 v01r02

➤ Product Classification

This device defined as a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at 20 cm is normally maintained between the transmitter's radiating structure(s) and the body of the user or nearby persons.

➤ Radio Frequency Exposure Limit

| Frequency range (MHz) | Electric field strength (V/m) | Magnetic field strength (A/m) | Power density (mW/cm ²) |
|--------------------------|----------------------------------|----------------------------------|--|
| 300-1,500 | -- | -- | f/1500 |
| 1,500-100,000 | -- | -- | 1.0 |

➤ Radio Frequency Exposure Calculation Formula

$$S = \frac{PG}{4\pi R^2}$$

where: S = power density (in appropriate units, e.g. mW/cm²)
P = power input to the antenna (in appropriate units, e.g., mW)
G = power gain of the antenna in the direction of interest relative to an isotropic radiator
R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

or:

$$S = \frac{EIRP}{4\pi R^2}$$

where: EIRP = equivalent (or effective) isotropically radiated power

a) EUT RF Exposure Evaluation standalone operations(worse case)

| Mode | *Max Time-average Power with Tune-up (Worst-case) (dBm) | Directional Gain (dBi) | Distance (cm) | Power Density (mW/cm ²) | FCC Limit (mW/cm ²) |
|------------|---|------------------------|---------------|-------------------------------------|---------------------------------|
| 2.4G Wi-Fi | 14.73 | 8.0 | 20 | 0.037 | 1.0 |
| 5G Wi-Fi | 24.08 | 11 | 20 | 0.641 | 1.0 |

Note:

1. *2.4GHz Band RF Output Power: Refer to CN22HYZD 001
2. *5GHz Bands RF Output Power: Refer to CN22HYZD 002

b) Simultaneous transmission MPE:

Per KDB 447498 D01, simultaneous transmission MPE test exclusion applies when the sum of the MPE ratios for all simultaneous transmitting antennas incorporated in a host device, based on calculated or measured field strengths or power density, is ≤ 1.0 .

Simultaneous transmission Scenarios

| No. | Simultaneous transmission Scenarios |
|-----|-------------------------------------|
| 1 | 2.4GHz Wi-Fi + 5GHz Wi-Fi |

| Simultaneous transmission Scenarios | Sum for the MPE ratio | Limit | Verdict |
|-------------------------------------|-------------------------|-------|------------|
| 2.4GHz Wi-Fi + 5GHz Wi-Fi | $0.037/1+0.641/1=0.678$ | 1.0 | Compliance |

➤ **Conclusion**

Therefore the maximum calculations result of above are meet the requirement of Radio Frequency Exposure (MPE) limit.